transplants suggested to Murphy that Porter might be capable of transplanting the hypothesized tumor particles from an infected cell to other cells. When he came into the laboratory, though, Porter continued the transplant studies he had been pursuing. His goal was to demonstrate cytoplasmic influences upon development by comparing embryos into whose cytoplasm he transplanted the nucleus of a different race with normal embryos of that race. The results indicated a genetic effect of the cytoplasm as well as of the nucleus. Given the focus of the laboratory on cancer, though, Porter also began to investigate the inhibition of growth from carcinogenic agents, including X-rays and such chemicals as methylcholanthrene. He examined both the effects of different dosages on tail regeneration in the newt and the character of the tissue reaction induced.

For a number of years, Porter's research seemed to be largely independent of other investigators in the laboratory. However, as Claude was exploring the use of the electron microscope, the value of having Porter in the laboratory was realized when Porter proposed using tissue-cultured cells to produce sufficiently thin specimens for electron microscopy (see Chapter 4). Working with Claude and Fullam at Interchemical Corporation, Porter produced a composite electron micrograph (from several pieces imaged separately) of a whole chick embryo cell. Figure 5.1 shows this micrograph and a comparable one from a light microscope that they included for comparison. The nucleus was generally too thick to observe anything but the nucleoli, which appeared as less dense than the rest of the nucleus. Parts of the cytoplasm, though, generated a detailed image. The following is the figure caption in which Porter et al. presented their interpretation:

> Electron micrograph of a fibroblast-like cell, and nerve fibers cultured from a chick embryo tissue. Differential absorption and scattering of electrons by the cytoplasmic area has silhouetted a number of structural details among which are: filamentous mitochondria of various lengths and fairly constant width; scattered, small elements of high density especially abundant around the nucleus and presumably representing Golgi bodies; and a delicate lace-work extending throughout the cytoplasm. The nucleus is visible but multiple scattering of electrons due to excessive thickness results in considerable blurring. Three nerve fibers can be seen: one crossing the upper part of the picture and having no connection with the cell; one ending in contact with the cell surface at the right; and one at the lower part of the picture also in contact with the cell surface. This latter has the appearance of a growth cone. Details of the cell's margin and extensions are clearly defined. The arrows point to extensions mentioned in the text as "jagged points" (a) and "finger-like processes". (1945, p. 246)